



# Consideration of Safety and Mission Success in an MBSE Environment

Presented at the NASA/JPL MBSE Symposium  
January 27, 2017

Dr. Frank Groen  
Office of Safety and Mission Assurance  
NASA Headquarters  
Washington DC

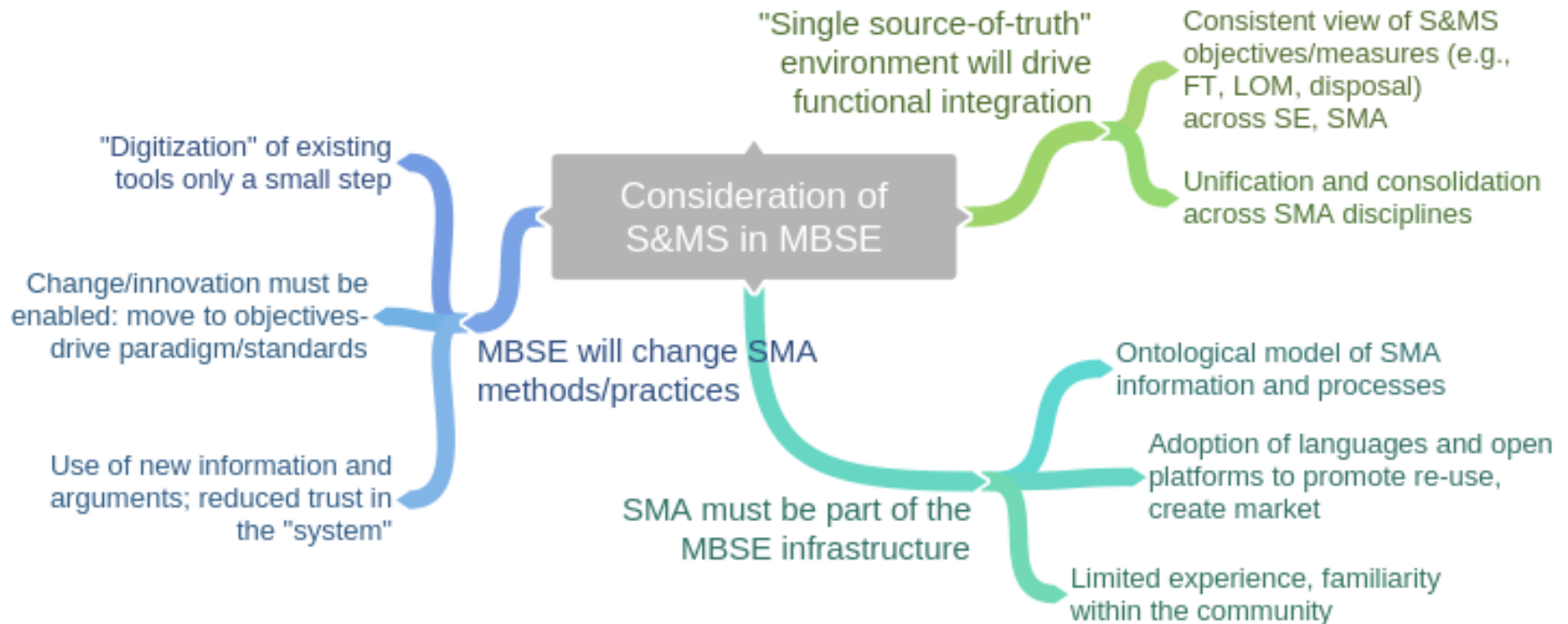


# Interest in MBSE based on OSMA's Mission

- Health of Safety and Mission Assurance (SMA) discipline capabilities
  - Challenge: maintain SMA support of current and future programs
  - Opportunity: advance practices
  
- Impact on Technical Authority's checks and balances function: concurrence on decisions involving risk to safety & mission success considering:
  - Soundness of technical basis
  - Authority to accept risk
  - Acceptability of aggregate risk to SMS

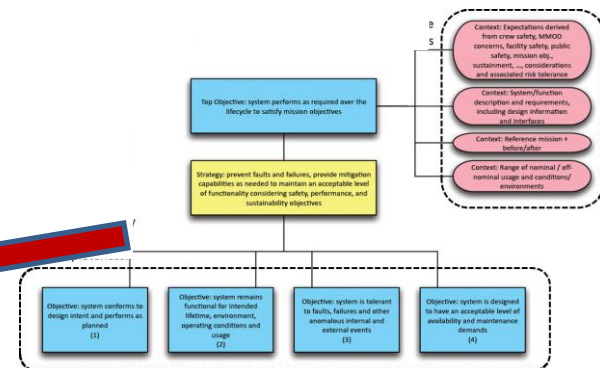
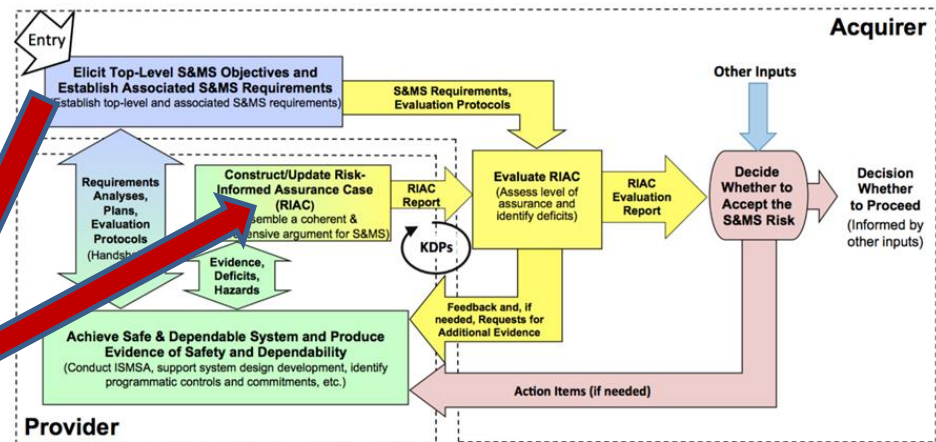
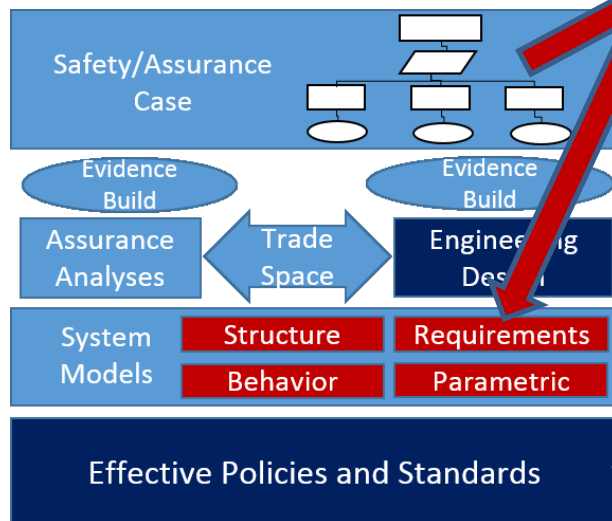
See NID 8000-108

# Some Top-Level Considerations



# A S&MS Framework within the MBSE Infrastructure

- Pursue objectives-driven rather than product-oriented approach
- Decompose SMA objectives to guide selection of processes, tools, standards, performance measures; track assurance shortfalls and risk; structure assurance case



# S&MS Use Cases for MBSE Infrastructure

- Model S&MS objectives, performance measures, uncertainties
- Optimize S&MS within cost/schedule constraints; be part of trades
- Identify S&MS risk drivers; model accident scenarios;
- Track critical items and controls/assurance activities
- Validation & verification of S&MS requirements
- Document risk acceptance decisions consistent with mission classification
- Document and evaluate S&MS case including alternate approaches and accepted risks
- Conduct assurance of the model itself



# Final Thoughts

Adoption of MBSE incentive and opportunity to fundamentally advance the assurance discipline.

A clear and consistent view of S&MS objectives will benefit such an advance